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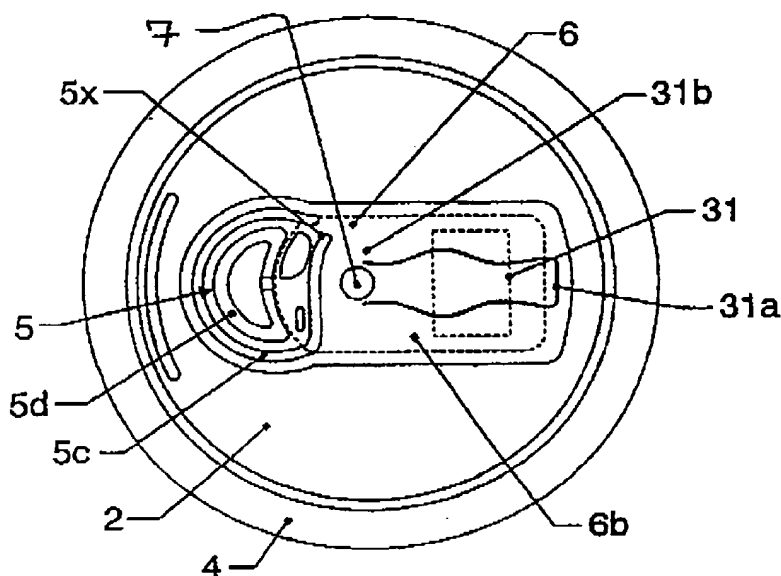


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(54) **COUVERCLE ARRACHABLE A ZONE D'OUVERTURE
FACTICE**
(54) **PULL-TAB LID WITH A SURPRISING PULL-OFF REGION**



(57) L'invention a pour objet un couvercle arrachable pour boîte-boisson standard, comprenant une première zone d'arrachement (5; 5a, 5b, 5c; 14) pouvant être ouverte en apparence au moyen d'une languette à anneau (6). A proximité ou en dehors de la première zone, il est prévu une deuxième zone d'arrachement (8, 9, 10; 13, 9'). Le couvercle (12) ou un segment (10) du couvercle s'ouvre de façon inattendue dans la deuxième zone et non (comme prévu) dans la première zone (5, 14). On dispose ainsi d'un moyen simple pour surprendre l'utilisateur lorsqu'il ouvre une telle boîte, sans affecter pour autant l'ouverture simple et fiable de cette boîte.

(57) A pull-tab lid is proposed for a standard drinks can. A first pull-off region (5; 5a, 5b, 5c; 14) appears liable to open when a grip lug (6) is pulled. A second pull-off region (8, 9, 10; 13, 9') is provided next to or outside the first; the lid, or a segment (10) thereof, opens unexpectedly in the second region, instead of (as expected) opening in the first region (5, 14). This makes it easy to surprise the user when opening a can of this type without adversely affecting the simple and reliable opening of the can.



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**INTERNATIONALE ANMELDUNG VERÖFFENTLICHT NACH DEM VERTRAG ÜBER DIE
 INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT)**



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<table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>(21) Internationales Aktenzeichen: PCT/DE96/01838</p> <p>(22) Internationales Anmeldedatum: 26. September 1996 (26.09.96)</p> <p>(30) Prioritätsdaten: 195 35 827.9 26. September 1995 (26.09.95) DE</p> <p>(71) Anmelder (für alle Bestimmungsstaaten ausser US): SCHMALBACH-LUBECA AG [DE/DE]; Schmalbachstrasse 1, D-38112 Braunschweig (DE).</p> <p>(72) Erfinder; und</p> <p>(73) Erfinder/Anmelder (nur für US): STRUBE, Lutz [DE/DE]; Eckernkampstrasse 4, D-38162 Cremlingen (DE). REICHINGER, Richard [GB/GB]; 3 Münster Court, Liverpool L7 3QB (GB).</p> <p>(74) Anwalt: LEONHARD, Reinund; Leonhard Olgemöller Fricke, Josephspitalstrasse 7, D-80331 München (DE).</p> </td> <td style="width: 50%; vertical-align: top;"> <p>(81) Bestimmungsstaaten: CA, PL, US, europäisches Patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p>Veröffentlicht <i>Mit internationalem Recherchenbericht. Vor Ablauf der für Änderungen der Ansprüche zugelassenen Frist. Veröffentlichung wird wiederholt falls Änderungen eintreffen.</i></p> </td> </tr> </table>			<p>(21) Internationales Aktenzeichen: PCT/DE96/01838</p> <p>(22) Internationales Anmeldedatum: 26. September 1996 (26.09.96)</p> <p>(30) Prioritätsdaten: 195 35 827.9 26. September 1995 (26.09.95) DE</p> <p>(71) Anmelder (für alle Bestimmungsstaaten ausser US): SCHMALBACH-LUBECA AG [DE/DE]; Schmalbachstrasse 1, D-38112 Braunschweig (DE).</p> <p>(72) Erfinder; und</p> <p>(73) Erfinder/Anmelder (nur für US): STRUBE, Lutz [DE/DE]; Eckernkampstrasse 4, D-38162 Cremlingen (DE). REICHINGER, Richard [GB/GB]; 3 Münster Court, Liverpool L7 3QB (GB).</p> <p>(74) Anwalt: LEONHARD, Reinund; Leonhard Olgemöller Fricke, Josephspitalstrasse 7, D-80331 München (DE).</p>	<p>(81) Bestimmungsstaaten: CA, PL, US, europäisches Patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p>Veröffentlicht <i>Mit internationalem Recherchenbericht. Vor Ablauf der für Änderungen der Ansprüche zugelassenen Frist. Veröffentlichung wird wiederholt falls Änderungen eintreffen.</i></p>
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<p>(54) Title: PULL-TAB LID WITH A SURPRISING PULL-OFF REGION</p> <p>(54) Bezeichnung: AUFREISSDECKEL MIT ÜBERRASCHENDEM AUFREISSBEREICH</p> <p>(57) Abstract</p> <p>A pull-tab lid is proposed for a standard drinks can. A first pull-off region (5; 5a, 5b, 5c; 14) appears liable to open when a grip lug (6) is pulled. A second pull-off region (8, 9, 10; 13, 9') is provided next to or outside the first; the lid, or a segment (10) thereof, opens unexpectedly in the second region, instead of (as expected) opening in the first region (5, 14). This makes it easy to surprise the user when opening a can of this type without adversely affecting the simple and reliable opening of the can.</p> <p>(57) Zusammenfassung</p> <p>Vorgeschlagen wird ein Aufreißdeckel für eine Getränkedose üblicher Art, bei dem ein erster Aufreißbereich (5; 5a, 5b, 5c; 14) vorgesehen ist, der scheinbar geöffnet werden kann, wenn eine Griffflasche (6) betätigt wird. Ein zweiter Aufreißbereich (8, 9, 10; 13, 9') ist neben oder außerhalb des ersten Bereiches vorgesehen, in welchem zweiten Bereich die Öffnung des Deckels (12) oder eines Segmentes (10) des Deckels - anstelle der (erwarteten) Öffnung des ersten Bereiches (5; 14) - überraschend erfolgt. Damit wird eine einfache Möglichkeit geschaffen, um den Benutzer einer solchen Getränkedose beim Öffnen zu überraschen, ohne daß das einfache und zuverlässige Öffnen der Getränkedose dadurch beeinträchtigt wird.</p>				

CA 02232871 1998-03-24

Openable can end with surprising opening portion

The invention relates to openable can ends for beverage cans, which cans are made of sheet material, and to the design of such can ends.

5 Such openable can ends are usually provided with a score line defining an area in the central panel, the score line serving for opening the can end by tearing and providing an opening for drinking or pouring out the content. The area in which
10 said tear-out score line is located usually is stiffened by beads or ribs (line deformations) or a two-dimensional deformation. In the area of this stiffened tear-out portion a lever-type tab, mostly made of sheet material, is attached, mostly by means of a rivet. With said lever-type tab, the tear-out portion firstly is broken in and then at least partly torn out in order to provide an opening for pouring out or drinking.

15 It is the **object of the invention** to provide a simple means for surprising the user when he opens such a beverage can, without impairing the simple and reliable opening of the beverage can.

20 This problem is solved according to claim 1, 6 or 16.

A can having an end according to the invention can at first sight practically not be distinguished from a "usual can". Like a usual can, the central panel comprises an area stiffened by beads, ribs or deformations which may also have a kind of
25 score line. The lever-type tab also is of usual form and is attached in a usual fashion by a rivet. When opening the can end, the user expects that the central panel breaks in, tears and continues to tear at the visible portion usually provided for opening and that, in this area, which is characterized by the stiffenings, the opening for the removal of the liquid is thereby provided. But in fact, the score
30 line - if visible from outside in the stiffened area - is provided in such a way that it does not tear when opening, i.e. when actuating the lever-type tab. Instead, a score line for opening - which for the user is not or only hardly visible when the can is closed - is provided near or outside the usual and stiffened area, and also independent of it, so that, when opening the can with the lever-type tab, the
35 opening for pouring out is provided at a portion completely different from the stiffened area (claim 6).

CA 01131871 1998-03-24

In order to make the tear-out score line invisible or only hardly visible for the user, said score line may be provided at the backside or underneath the can end or it may be embossed/stamped from the backside (claim 5). However, a score line may be located on the upper side or top surface in such a way that it is hidden or covered by said lever-type tab. Said score line may be covered either completely or partly (claim 3, claim 7, claim 16). If it is partly covered - if the lever-type tab covers only a section of the score line - at least that portion of both score lines is covered - and thus hidden from the user's eye - which allows the initial break-in by its design. Therefore, it is not obvious which one of the two (or more) score lines starts to break in, although a number of possible opening portions are visible.

The invention may serve to provide a delimited opening portion, as it is usual with beverage cans, particularly having exactly the usual standard score line in the stiffened area. However, a score line provided underneath said lever-type tab may be positioned in the central panel in such a way that, when tearing out, this portion delimits a rupture tongue with which and with a score line extending along the edge of the end, the central panel may be torn out as a whole to provide an opening. In this case, it is a full opening end (claim 4).

The torn-out can end portion may comprise a mark (symbol or pattern; on the backside), which mark may also be provided well-hidden on the backside of the tab. Said mark should only be visible when the can has been opened at a surprising portion (claim 8). Said surprising portion may be a tear-out opening segment (claim 9), thereby being expressed that a complete portion of the can end is torn off in outward direction, no longer being connected with the remaining central panel. The segment inviting to be opened, which shall be caused to pivot inwards like a lever by means of the lever-type tab and which surprisingly does not open, remains a standard opening segment pivoting into the can (in direction of the backside of the end). In case of those can ends, for which the surprise is not intended, which therefore should open like a usual can end, the alleged pivoting (virtual) opening segment is a real opening segment, the surprising opening segment not being torn out. As distinguished from the tear-out (surprising) opening segment, the pivoting opening segment works with an initial break-in portion, where the ends of the score line are positioned the most closely

CA 02232871 1998-03-24

together, where the initial break-in portion is formed by the shearing force of the opening lever. The continuous tearing of the standard score line causes the opening portion to pivot inwards. In case of the intended surprise, for example in case of only a few cans out of a large charge, the break-in process is initiated by tearing out. Correspondingly, this is to express, that in general terminology, opening by tearing ("Aufreißen") comprises breaking in ("Einbrechen") as well as completely tearing out ("Ausreißen"), breaking in comprising the component of a movement in inward direction and tearing out the component of a movement in outward direction.

Further symbols or patterns may be incorporated in the end, to appear only when the closed can is pressurized (claims 10, 11). These non-tearing "score lines" may be applied by laser (claim 12).

In an embodiment having two opening portions visible to the user from outside, that portion of said several portions which is located under the lever-type tab defines which one of them breaks in and continues to tear when the lever-type tab is actuated (claim 13, 16). Said covered portions are advantageously provided in the attachment area (at the rivet) of the lever-type tab (claim 17), where the lever-type tab has the largest coherent surface area and where it is least moveable in upward direction (to avoid "kibitzing" of curious people).

In an embodiment where there is provided a greater number of opening portions than ends are present at the lever-type tab (on both sides of the rivet), the lever-type tab is provided pivotably (around the rivet), so that more than two opening segments may be achieved. They may consist of pairs of pivoting segments and tear-out segments (claim 9) being distributed symmetrically around the center of the central panel. For selecting the desired pair, the lever-type tab is turned like a wheel of fortune.

The portion being designed as surprising opening portion may have the shape of a bottle (claim 14), other shapes also being definable by score lines (stars, cricket sticks, hockey sticks), particularly sports motifs. If a bottle shape is selected to constitute the tear-out segment, the shape of the bottle may approach a bottle shape well-known to the user, with which bottle shape the user associates the content of the sheet can. Nowadays, common beverages are

02232871dis.afp Page 4

CA 02232871 1998-03-24

bound to common bottle shapes, and the user recognizes these bottle shapes without particular trade names having to be indicated. These bottle shapes may be attributed to the surprising tear-out portions in case the beverage contained in the metal can corresponds to the beverage usually sold under and with this bottle shape.

The invention is described in detail on the basis of schematic drawings with several embodiments.

In the drawings:

- Figure 1 is a view from above of an openable can end 1 according to the invention.
 - Figure 2 shows the can end 1 according to Figure 1 from the backside with opened portion 9 for pouring out.
 - Figure 3,
Figure 3a,
Figure 3b are a backside and two side views of a portion 10 according to Fig. 2, torn out of a can end 1 with a lever-type tab 6.
 - Figure 4 shows a modified embodiment 19 in a view similar to Figure 1, the lever-type tab being omitted for the reason of distinctness.
 - Figure 5a,
Figure 5b,
Figure 5c give examples of non-tearing score lines 21a, 21b, 21 incorporated by laser on the backside and causing symbols or marks 20a, 20b on the top after pressure is applied.
 - Figure 6a,
Figure 6b give examples of tear-out portions 30, 31 with a new geometrical shape.
- The openable can ends are preferably made of sheet material.

5 The can end 1 according to Figures 1 and 2 comprises an area 5 in its central panel 2, which is circumscribed by an edge 3 of the can end, which area 5 is stiffened by usual ribs 5a or beads 5d or two-dimensional deformation(s) 5b. As shown, a sort of score line 5c may also be visible in this area. However, this score line may also be missing. Said area 5 corresponds to a usual stiffened area of usual openable can ends, so that the user of a can, which is closed with such a can end, has to and will suppose that - when opening it - the sheet material tears out along line 5c in a usual way and opens the drinking or pouring
10 portion.

As usual, a lever-type tab 6 is attached to the central panel 2, preferably by a rivet 7, and close to said area 5 and preferably in a relative position with regard to said area 5, as this is usual for usual beverage can ends.

15 The view and the structure of said can end 1 in the top view according to Figure 1 may deviate from the illustrated form insofar as the outer appearance corresponds to that of a usual openable can end.

20 Figure 2 is a backside view of the can end, a sealing compound 4 being incorporated in the edge 3 of the can end. Again the stiffened area 5 is visible. Outside this area and independent of it, a score line 8 is provided which may be broken in at section 8a and further torn out to provide an opening 9 in the central panel 2. As a comparison with Figure 1 shows, said score line normally is covered from outside by said lever-type tab 6. However, it may also be
25 incorporated in the sheet material from the backside, so that - independently of being covered by said lever-type tab 6 - it is not or not easily visible from outside.

Figure 2 shows the can end 1 after tearing out the sheet strip segment 10 delimited by said score line 8, which sheet segment being durably attached to said tab 6 by said rivet 7. The score line 8 may also be arranged in such a way that it is interrupted in the area close to the edge of the can end, so that, also after opening, the strip segment 10 remains definitely attached to said can end 1.
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02232871dis.afp Page 6

CA 02232871 1998-03-24

The purpose and the function is to surprise the user when opening a can being equipped with the new can end with regard to the position and the shape of the opening portion being provided. This surprising effect may for example be used to designate winners in a sales competition by providing for example a
5 corresponding mark (first prize, second prize) on the backside of the sheet segment 10, which mark becomes visible (only) after opening the can end. Winners are surprised by the unexpected opening fashion, losers do not realize anything and open the usual can.

10 Figure 3, Figure 3a and Figure 3b are a top view and two side views of torn-out opening segments corresponding to the opening segment 10 of Figure 2. On said opening segment 10, the inner surface area is marked, where a mark informing and legitimating a winner in the above described scope may be provided. The initial tear-out portion, at which the tear-out process starts, is
15 designated with reference numeral 8a and corresponds to the semicircular portion of Figure 2. By actuating said lever-type tab 6, which has to be capable of causing the pivoting process of the usual opening portion 5 and which simultaneously has to take along the tear-out portion 10 of those can ends which are intended to open surprisingly, the tear-out portion 10 is strongly bent when
20 the can is opened, as illustrated by Figure 3a. In an inner recess of said tab 6 according to Figure 3b, a pivoting tab 6a may be provided to stop said bend, so that said tear-out portion 10 is almost not bent. In all Figures 3, said rivet 7, with which said tear-out portion 10 is - according to Figure 3a - either directly attached to said tab 6 or fixed at said tab 6 via said pivoting tab 6a, is clearly
25 visible.

The end of said tear-out segment 10 is a separable score line with its portion 8b, which score line may have a substantially straight extension in order to be easily separable.

30 Figure 4 shows a further embodiment of an openable can end 10 being provided as a full opening end. The end again has a stiffened area 14 in the central panel 12 surrounded by the edge of the can, which area 14 corresponds to area 5 as shown in Figure 1. Outside and independent of said area 14, a score
35 line 18 is provided in the central panel, which score line starts to break in at 18a with the aid of a lever-type tab being omitted in Figure 4 for the reason of

- 6 -

simplification. It is provided outside said area 14 and independently thereof with regard to its opening function, e. g. stamped in the backside of the end, terminating at 16 and 16'. Additionally, a further tear-out score line 13 is provided which is located parallel and close to the edge 11 of the can end. Firstly, the
5 score line 18 may be opened with the lever-type tab attached to rivet 15 to form an opening segment 10' in strip form stiffened by ribs 17, which opening strip then serves as opening tab for opening said score line 13, in order to separate the whole central panel 12 from the can to open it.

10 It is again emphasized that the form of the visibly stiffened area 5 or 14 and the type of stiffening may deviate from the form and arrangement shown. The stiffened area should be provided in the respective usual way. The same applies to the lever-type tab and its attachment as well as its relative attachment with regard to the stiffened area. Before opening a can being equipped with a can
15 end according to the invention, the user should have the impression to open a usual can at the usual portion. Thus, the surprising effect is achieved, when the can opens - to the complete surprise of the user - at a different portion.

20 Figures 5a to 5c show can ends having a pattern incorporated on their backside which appears on the top side of the end, when the can (covered by the end) is pressurized. The manufacturing is illustrated in three steps. According to Figure 5c, the patterns 20a, 20b are applied by laser on the backside of the central panel 2. The symbols are provided as circular designs 21 with a pair of stripes 21a, 21b inside. From the top, the ends have usual appearance, the
25 patterns 20a, 20b incorporated from the backside not being visible, as illustrated by Figure 5b. Figure 5a again shows the top view of an end as pressurized; the patterns 20a, 20b appear as if they had been incorporated in the end attached to the filled can.

30 The "score lines" 21, 21a, 21b defining the patterns 20a, 20b are only visible, not openable and may not be opened. With regard to the patterns 21, 21a and 21b, the term "score line" is to be understood such that it does not have the usual function of score lines, but serve for forming marks, symbols and ornaments on the top side of the can in a manner favourable for production. In contrast to said
35 "score lines", the score lines circumscribing the real opening section in the sense described at the beginning have a greater depth, the remaining thickness of the

CA 02232871 1998-03-24

sheet material therefore being less. The score lines which are only optically visible and which are not intended to tear may leave a considerably larger sheet thickness, thus having a smaller depth than the score lines really opening.

5 Figures 6a and 6b show an embodiment of the opening portion 30,31
corresponding to the opening portion 10 of Figure 2 with regard to its function. In
this embodiment, said opening portions have the shape of a usual bottle, their
section close to the rivet defining whether the bottle shape really opens when
actuating the lever-type tab 6 or whether it remains closed to open instead the
10 pivoting section 5 along the score line 5c with the initial break-in section 5x. The
section determining which of the two opening portions really open is covered in
the section close to the rivet by said lever-type tab 6 and indicated by a broken
line in Figure 6a. Outside said section, the opening segments are visible, the
bottle-shape opening segment 31 as well as the usual opening portion 5.

15 In Figure 6a, the usual opening portion opens by starting to break in at the
end 5x of the real opening score line 5c. The two ends of the score line are close
to each other. The two ends of the only visible score line 31a defining the second
opening segment 31 are clearly spaced apart in section 31b and do not close, do
20 not even approach each other.

In the embodiment of Figure 6b, the tear-out portion 30 is the opening section
being provided with a real tear-out score line 30a which is opened by the lever-
type tab 6 - which is not illustrated in this Figure. The bottle shape of the score
25 line 30a closes over the initial tear-out section 30b around the rivet 7. Instead,
the usual score line 5c according to Figure 6a is not provided with an end 5x, but
terminates before at 5y, so that the opening section 5 does not open when
actuating said lever-type tab 6.

30 The respective determining section of the score line on either side of said
rivet 7, which section determines which one of the two opening sections really
opens when actuating said lever-type tab, is covered by the two-dimensional
part 6b of said lever-type tab 6. Therefore, it is not visible to the user, even if the
user can easily recognize the two opening portions 30 and 5 or 31 and 5 from
35 outside. Only the sections of the score line and of the dummy score line,
respectively, defining the initial break-in section or the initial tear-out section with

CA 02232871 1998-03-24

regard to their opening function, are hidden.

CA 02232871 1998-03-24

Claims:**Claims:**

- 5 1. **Openable can end** made of sheet material for beverage cans, having a central panel (12;2) which is provided with a score line (5c), an area (5) delimited or defined by beads or ribs in substantially prior fashion for providing a tear-out portion for opening an opening portion of delimited size, and a lever-type tab (6) which latter is mounted (7) close to said delimited
10 area (5) on the central panel, whereby said score line (5c) or an additional tearable score line (8,13,18) for opening or exposing said opening portion (9) of delimited size is placed outside said delimited area (5) and independently of it in said central panel (2) such that it covers at least that portion of the central panel, in which spaced, initial break-in
15 sections (8a,18a;31b,30b,5x,5y) of the score lines would be positioned.
2. **Openable can end** according to claim 1, wherein said tearable score line (13) for opening said opening portion (9) is located parallel and close to the rim (3) of the can end.
- 20 3. **Openable can end** according to claim 1, wherein said tearable score line (8;18) for opening said opening portion (9) is covered or hidden completely by said lever-type tab (6).
- 25 4. **Openable can end** according to claim 3, wherein said score line (18), provided below said tab (6), delimits a rupture tongue (10") in said central panel (12), said tongue being adapted to tear out the central panel (12) as a whole (full opening end) along said additional score line (13) extending along the rim (11) of the can end.
- 30 5. **Openable can end** according to one of the aforementioned claims, wherein said tearable score line (8,18,13) for opening said opening portion is provided at the inside surface of the can end.
- 35 6. **Openable can end** for a beverage can of usual type, in which

CA 02232871 1998-03-24

- (a) a first tear-out portion (5;5a,5b,5c,5d;14) is provided, which seems to be openable, when a tab (6) is operated;
- (b) a second tear-out portion (8,9,10;13,10';30;30a,30b) is provided beside or outside said first portion, in which second portion the opening of the end (12) or a segment (10,30) of the end (12) happens surprisingly - instead of the (expected) opening of said first portion (5;14).
7. Openable can end according to claim 6, the second (real) tear-out portion (10,30,10') being visually hidden, so that it may not or only hardly be perceived from outside, at least the portion (5x,5y;30b,31b) which causes or seems to cause the opening, with regard to the first or second tear-out portion, respectively.
8. Openable can end according to one of the aforementioned claims, a mark being provided on the side of the tab (6) facing the can end or on the inner side of the real tear-out (second) portion (10,30,10').
9. Openable can end according to one of the aforementioned claims, said first portion (5,14) being an (alleged to be) inside pivotable (virtual) opening segment and said second portion being a tear-out opening segment (10,30), and - when an opening really is intended by said tear-out portion (10,30) - the score line (30a,30b) entirely surrounds said rivet (7) of said lever-type tab (6).
10. Openable can end also according to claim 8 or 9, characterized in that further score lines (21,21a,21b) are applied at the inner side (bottom side) of the central panel (12,2), defining patterns or symbols (20a,20b) on the top or outer side of the central panel, when the can is pressurized, said further score lines however not being tearable.
11. Openable can end according to claim 10, characterized in that said further "score lines" (21,21a,21b) are not visible from outside if no filling pressure is affecting the can end.
12. Openable can end according to claim 10 or 11, characterized in that said

further "score lines" are applied by laser.

- 5 13. Openable can end according to claim 3, the covered portion (8a,18a,30b,5x,5y,31b) of the score line (8,13,31a,30a,5c) being the portion enabling and not enabling the initial break-in of said score line.
- 10 14. Openable can end made of sheet material according to one of the aforementioned claims, the second - break-in or not break-in - opening portion (30,31) which, to a large extent, is located under said lever-type tab, having the shape of a sports motif or a bottle.
- 15 15. Openable can end according to claim 14, the bottle shape of said second opening portion being adapted to the content of the beverage container being closed with said can end.
- 20 16. **Openable can end** made of sheet material for beverage cans, having a central panel (2;12) which is provided with two spaced apart independent opening portions (5,14;30,31,10,10',13), **only one** of which being initially openable by tearing (5x,30b,18a,8a) and then continuously tearable further along a score line (5c,30a,8,18), whereby the initial sections of said opening portions - one of which being provided to initially break in and the other one of which being adapted not to initially break in - are covered by a lever-type tab (6) for causing the opening and further tearing.
- 25 17. Can end according to claim 16, the covered sections (8a,18a,5x,30b) of the score lines being located next to an attachment point (7) of said lever-type tab (6).
- 30 18. Can end according to one of claims 16 or 17, said "opening portion" - which is the alleged one - having two ends and a reduced score line depth, one end (5y,31b) of said alleged score line not approaching the other end of said alleged score line to substantially avoid an initial break-in or tear-out starting portion (30b,5x).

CA 02232871 1998-03-24

WO 97/11892

PCT/DE96/01838

1/3

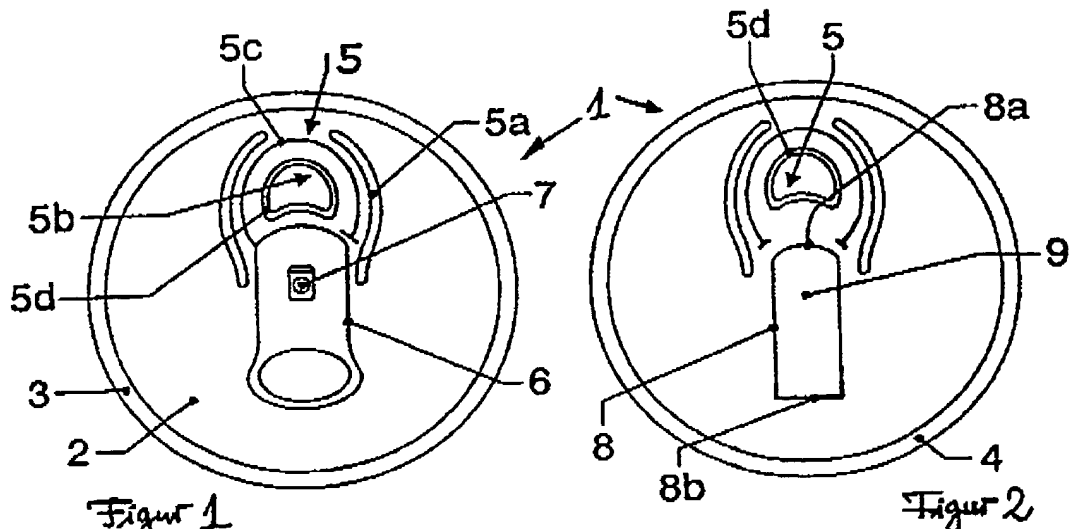


Figure 1

Figure 2

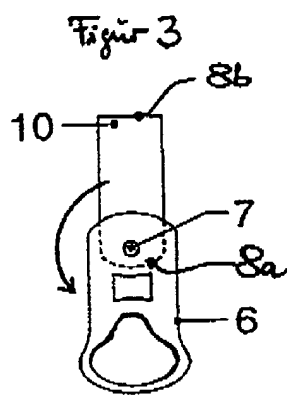


Figure 3

Figure 3a

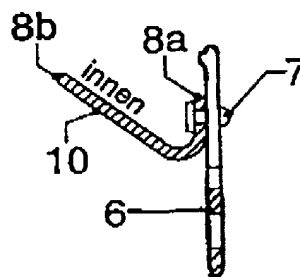


Figure 3b

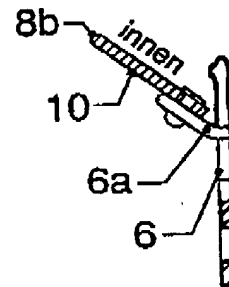
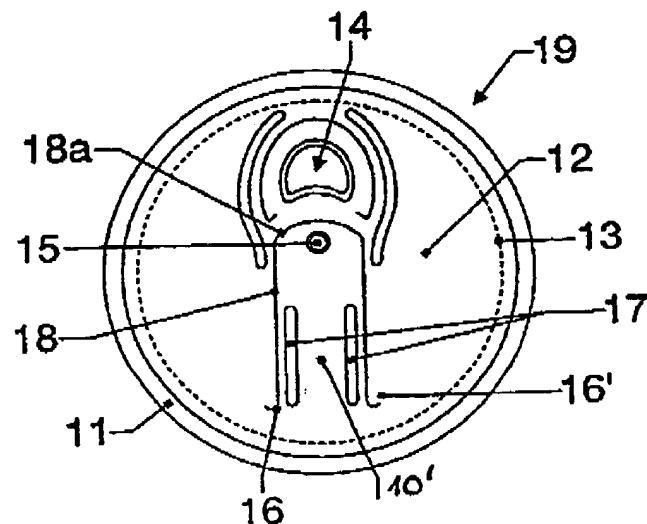


Figure 4



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CA 02232871 1998-03-14

WO 97/11892

PCT/DE96/01838

2/3

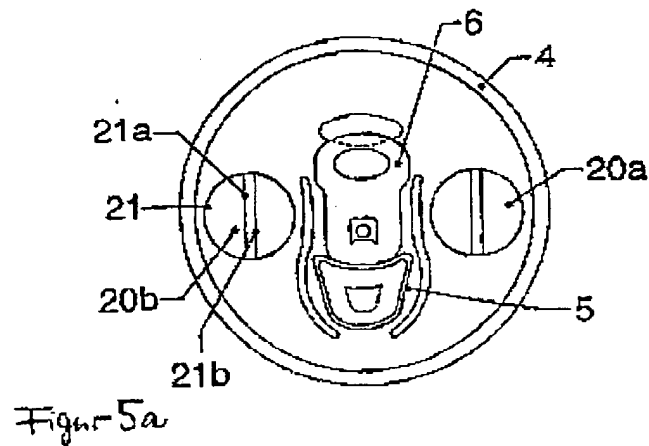


Figure 5b

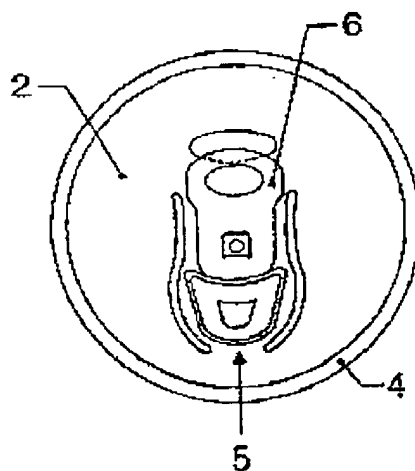
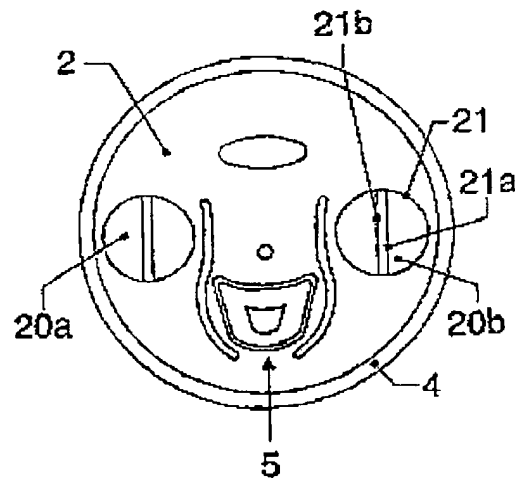


Figure 5c

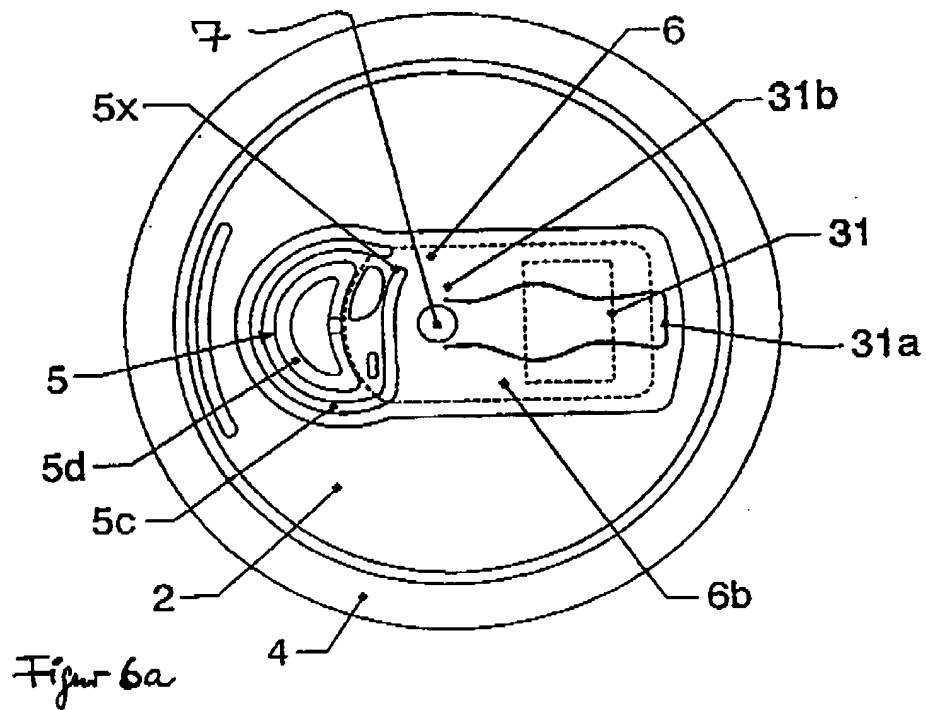


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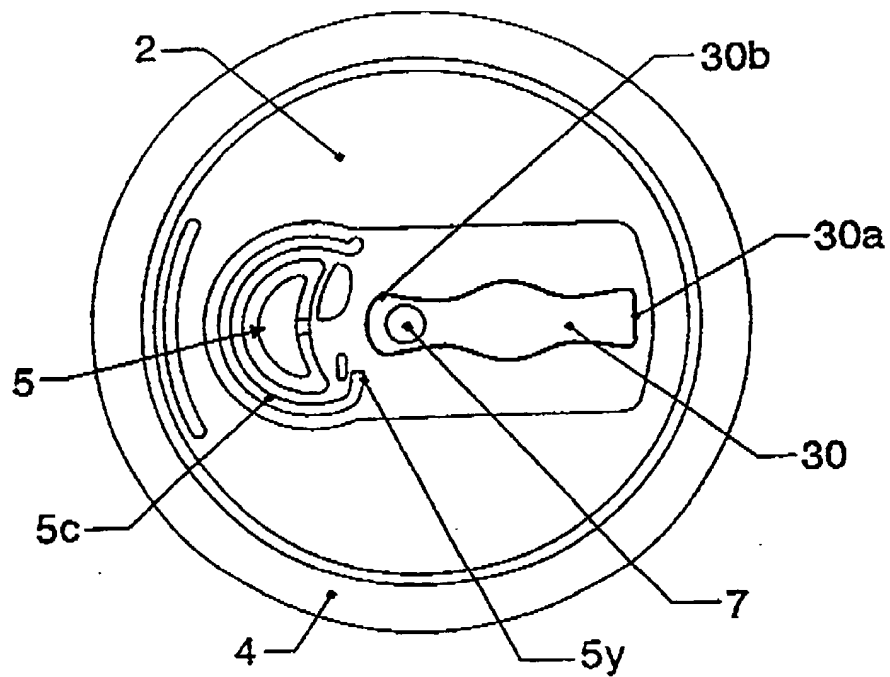
WO 97/11892

PCT/DE96/01838

3/3



Figur 6b



Harks & Olenk

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